Amy Humke, PhD

Mundelein, IL | amyhumke@gmail.com

LinkedIn: https://www.linkedin.com/in/amyhumke/ | GitHub:
https://github.com/AmyHumke12/SolarProject

Professional Summary

Data Scientist who designs, builds, and operationalizes models and LLM-powered assistants that change decisions. Reduced paid-media waste ~5% with high-propensity targeting. Turned a projected 10% enrollment drop into 2% by tying forecasts to operational triggers and targeted outreach windows. Built a Retrieval-Augmented Generation (RAG) MVP that answers applicant questions with grounded citations, confidence gating, and guardrails, improving trust in self-serve guidance. End to end on Databricks with MLflow and MARVIN MLOps for calibration, drift monitoring, and evaluation so insights become outcomes.

Core Competencies

- Python, SQL, Databricks; MLflow experiment tracking and artifacts; MARVIN MLOps with Evidently-based drift reports
- Supervised learning: XGBoost, logistic regression, KNN, MLP; time series forecasting; feature engineering and SHAP interpretability
- Generative AI: RAG system design, hybrid BM25 + vector retrieval, re-ranking, prompt design, answer gating, safety guardrails, offline/online evaluation (precision@k, nDCG@10, MRR)
- Model quality and reliability: calibration (isotonic), Brier/log-loss/balanced accuracy, fairness and cohort analyses, data quality checks
- Analytics and visualization: Tableau, Power BI, KPI dashboards, statistical process control charts, decision wiring to pre-committed actions

Education

- University of Nebraska-Lincoln: Ph.D., Psychology; M.A., Social Psychology; M.L.S., Law and Psychology
- University of Iowa: B.S., Psychology; B.A., Music

Experience

Western Governors University Data Scientist, Outreach Analytics | Oct 2024 - Present

- Cut paid-media waste ~5%; evidenced by rank-ordered lift in high-propensity segments that informed bidding and outreach, by building an XGBoost propensity model and routing top-decile leads to prioritized actions.

- Extended budget planning horizon from 3 to 16 months to improve staffing and budget decisions; achieved ~11–18% MAPE across horizons; by implementing a one-shot autoregressive XGBoost approach with lagged features, deltas, and anomaly flags feeding sequential months.
- Improved model reliability and auditability for monthly forecasting; evidenced by standardized runs, versioned artifacts, and automated drift reports; by leading the migration of 50+ notebooks into MARVIN MLOps with MLflow tracking and Evidently-based drift monitoring.
- Freed Enrollment Counselor time to focus on high-impact conversations by creating a chatbot to quickly answer common enrollment questions; evidenced by an MVP in internal testing with grounded citations, confidence gating, and a defined offline/online evaluation plan; built a RAG pipeline with hybrid BM25 + vector retrieval, re-ranking, guardrails, and query/evidence logging.

Western Governors University Analytics Manager, Enrollment | May 2022 - Oct 2024

- Reduced funnel attrition ~3%; evidenced with control-chart alerts tied to intervention windows; delivered a real-time Tableau dashboard with statistical process control and KPI triggers wired to outreach playbooks.
- Improved outreach timing and conversion; evidenced by A/B tests revealing time-sensitive effects that reshaped contact cadences; designed and analyzed experiments to update the marketing playbook.

McHenry County College Director of Institutional Research | Dec 2012 - May 2022

- Established collegewide analytics KPIs and a reporting cadence to align decisions and accountability; evidenced by President's Cabinet and Board usage in annual planning; built a KPI dictionary, governed data definitions with IT, and delivered executive dashboards.
- Strengthened assessment and program review by serving on faculty-led teams as a data consultant; evidenced by adoption of common templates and department-level dashboards used in review packets; provided study-design support and translated rubrics into measurable outcomes.
- Increased developmental course success by ~4%; evidenced by quasi-experimental analysis of a co-requisite program; evaluated outcomes and recommended scaling based on effect size and confidence checks.
- Led and developed a small analytics team to deliver on-time compliance and decision support; evidenced by 40+ dashboards and timely reports; implemented a project-tracking dashboard with IT and coached analysts on SQL, visualization, and stakeholder communication.

Selected Projects

- **Project Charter Chatbot (Professional Development):** Accelerated project kickoffs by auto-drafting charters from a structured intake and generating a polished PDF; evidenced by an MVP with staged evaluation criteria and internal test runs; engineered an agentic RAG workflow with JSON-driven question flow, safety guardrails, and PDF export.
- **Solar Production Prediction (Professional Development):** Determined solar break-even and reduced surprise utility costs; evidenced by monthly payback projections and "credit sufficiency" alerts when projected credits were unlikely to cover usage; built a Python model using local rate

structures, panel production estimates, historical consumption, and net-metering rules with scenario analysis.

- **Transcript Brokerage Impact Dashboard (WGU):** Drove adoption of a student support service by making impact visible to leaders; users of the brokerage service showed an average improvement of ~56% over the comparison group; designed a focused Tableau view to quantify differences and target awareness efforts.
- **Early Retention Risk Score, Pre-Day-1 (MCC):** Enabled proactive advising for first-term freshmen by surfacing high-risk deciles before classes began; targeted outreach yielded an estimated ~2 percentage-point lift in fall-to-spring retention for the focused group; trained a logistic regression model in SPSS, mapped probabilities to monotonic deciles, and operationalized weekly rosters with a light-touch outreach playbook.

Certifications & Awards

- Tableau Certified Data Analyst (2023-2025)
- Microsoft Certified: Power BI Data Analyst Associate (2022-2024)
- Trail Blazer Award, FY25 Q1 - WGU Office of the CFO Leadership
- Illinois Association for Institutional Research - President (2020-2021)